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ATTACHED IS A COPY OF THE FIRST SPEECH DR. JAMES C. FLETCHER DELIVERED AS ADMINISTRATOR OF NASA. I THOUGH YOU MIND FIND IT INFORMATIVE AND USEFUL.

Alfred P. Alibrando

ALFRED P. ALIBRANDO
OFFICIAL-IN-CHARGE
OFFICE OF PUBLIC AFFAIRS

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SPEECH
by
Dr. James C. Fletcher
Administrator
National Aeronautics and Space Administration
to the
Twenty-fifth Annual Conference
Aerospace Industries Association
Williamsburg, Va.

May 20, 1971

I am very pleased to have this early opportunity to meet with the Board of Governors of the Aerospace Industries Association to exchange views and get better acquainted.

I am glad this is a rather informal occasion. It is not the time for me to attempt to make definitive policy statements on the future of the Nation's space and aeronautics program. But I do have some convictions and some enthusiasms that I want to convey to you.

This is my first speech as NASA Administrator, but I have already had my baptism of fire. After one week on the job at NASA I had my first press conference, and the first question, right off the bat, was whether I had ever felt, after agreeing to take this job, something like the captain of the Titanic?

Whatever the implications of the Titanic question, my answer was, of course, NO! The NASA ship is on the right course. We will move forward at a prudent speed. We may not be carrying all the freight we could carry, but we are in no danger of sinking, either. America needs progress in space as much, or more, than ever before. The world needs it. That is the message we must get across.

As I size up the NASA situation today, after two and one-half weeks on the job, I see two important points that need to be stressed.

First, we are in a much stronger position this year because we have not only sound programs underway, but also programs with great potential planned for this decade and the next. Post-Apollo planning has been a long and difficult process. I think an excellent job has been done in surveying the many possibilities for useful missions in space in this decade and the next and in identifying the most rewarding ones. I congratulate all who participated, and I know that includes all of you. It is a tremendous advantage for me, as the new Administrator, to have so much of the basis for planning for this decade already done, and done so well.

Now my second point. Despite our ongoing programs, despite our sensible planning for the future, we are still in a period of uncertainty. Our major new programs for this decade -- the Shuttle and the Grand Tour -- are still in the study stage; and NERVA is in a sort of "holding pattern." I expect favorable decisions to move into development on each of these major new programs in due course. But the question is when, and with what speed, and for what reasons.

Logical and necessary as each of these major new programs may seem to us, we still have to convince the President and Congress at each step and gain a strong measure of public support on each program.

The momentum built up in the 60s will surely enable us to complete the Apollo program with three more flights to the Moon; and to carry out very important experiments in Skylab; and to send the advanced Viking spacecraft to Mars.

But with the Shuttle, the Grand Tour, and NERVA, we get into a new ball game. I don't need to tell you all the ways in which the situation today is different from the situation ten years ago when President Kennedy went before Congress to recommend the lunar landing goal. For one thing, the very success of Apollo in demonstrating American space leadership has taken much of the sense of urgency out of the space program so far as the general public is concerned.

But have the basic reasons for a significant American investment in continued space progress really changed? I don't think so. I think they are as valid today as they were ten years ago, perhaps more so.

Perhaps because they do remain the same we get tired of talking about them. But if we cannot make the case for continued space progress fresh and interesting and convincing, then who can? Who will? Do we have to depend on the Russians?

I know that all of you have been wrestling with this problem of winning and holding public support for the space program for a good many years. You have worked on this problem as corporate officials for business reasons; and you have worked on it, too, as individuals concerned about the future of your country.

I think we need to do a better job in winning public support for the new NASA programs. I wish I could tell you how. Maybe you can tell me. This is something I intend to give high priority to as Administrator. This country needs space programs that move out vigorously to create new technology.

A space effort that limps along on yesterday's knowhow will not do much for the country. A slow program may cost less, but be worth nothing in terms of meeting the country's needs. And a slow program -- or no program -- is all we are going to have without strong support from the public.

The story of what we do in space is being well told. I see plenty of evidence of that. But the more we inform people about what we are doing and what it is costing them as taxpayers, the more we need to explain why we do it.

There is no need to search for a single overriding justification for the space effort as a whole. There isn't any -- except perhaps at a time of great national alarm, and we are not in such a period now. Space benefits take many different forms, tangible and intangible. Individual citizens may be impressed by some of these benefits and not by others. The President and the Congress have to try to weigh the whole package.

I think each of us should have his personal list of four or five reasons why this country, in 1971, should continue to make a substantial investment in space activities. Here's mine:

1. Some satellites, like weather and communications satellites, pay for themselves by doing useful work. We should invent and fly more self-supporting satellites.

2. We are seeking and getting valuable scientific knowledge from space we could not get in any other way -- valuable new knowledge about the Earth and its atmosphere, the Sun and the planets, and the universe. And about man himself.

3. Our national security is at stake in space. It would not be safe for the United States, with its great responsibilities for world peace, to lag behind any other country in space technology. This is an axiom we did not quibble about in the 60s and should not quibble about in the 70s. A strong space program offers many new opportunities for significant international cooperation and promotes the cause of world peace in this way, too.

4. The space program has proven to be an excellent hotbed for forcing new technology, which in turn raises our national productivity and prosperity and increases our ability to solve pressing social problems of today's urban society. This is a message we really need to get across. I will return to this point later.

5. Looking beyond the material benefits, I say space exploration is needed as inspiration for modern man. We cannot measure this, we may not be fully aware of it, but I think we are inspired, and our children are inspired, to be living in an age when men first moved out into space and began the exploration of our solar system. I think we would be ashamed of ourselves,

as a society, if we withdrew from space exploration now after such an auspicious beginning.

These are not the only benefits of space activity. There are many others. But these are the five I mention first, and which I could support with a detailed discussions.

The President has given much thought to the problem of identifying and articulating space benefits. His statement of March 7, 1970, on the future of the United States space program is a thoughtful and balanced statement that will stand the test of time. It gives us the framework and approach we need. Our job, NASA's and yours, is to fill in the details with specific programs that are sound in concept and will generate and receive the support we need.

In our discussion with the public, we need to explain and justify the space program as a whole. But we might get better results if we also made a greater effort to identify the expected benefits from each major part of it. In other words, let each part of the program rise or fall on its own merits.

For example, we might ask the following questions about each prospective new program before it goes into development:

-- Will it pay for itself by doing useful work?

-- How valuable is the new scientific knowledge it is expected to produce? And can this be obtained only from space?

-- Is it important for national security?

-- Does it lend itself to wide international cooperation?

-- Will it force the creation of valuable new technology?

-- Will it stir the interest of the American public?

-- Will it be the kind of program the taxpayer is able to identify with and approve of? Will it do something for our spirits, as individuals and as a society?

Not every candidate project need score highly on every question. But if these guidelines are applied with common sense and discretion to each candidate project, we are much more likely to end up with an overall program that we can advocate vigorously and convincingly in our discussions with the general public -- and with the Congress, I might add.

I do not mean to imply that we have not asked such questions in the past. But in our public discussions of the worth of the space program we have tended to apply such questions to the program as a whole rather than to its discrete parts. To put it bluntly, I don't believe we can justify a program like Apollo by talking about the benefits of weather satellites. Weather satellites justify themselves, and Apollo has its own special rationale.

Maybe one reason I like this list of questions is because the Space Shuttle scores so well. In fact, it scores 100 per cent. And that is indeed fortunate, because it looks like the Space Shuttle is going to be this country's main space effort in the decade of the 70s. We could do a lot worse. We could do more, of course, but I am convinced we couldn't have a better lead program.

As I mentioned earlier, and as you well know, we face decisions on starting serious development of the Shuttle, the Grand Tour and NERVA (Nuclear Engine for Rocket Vehicle Application).

The Administration has not wanted to become committed to heavy development costs on several major programs simultaneously. There is some strong sentiment in Congress for doing more than the Administration wants -- for example, moving faster on NERVA. And there are others who will oppose any new program.

It now appears more and more likely that our major effort in space in this decade, or at least for the next few years, is going to be concentrated on two new programs -- the Space Shuttle and the Grand Tour. And we will have to fight hard to get and keep these two.

If we are successful, the Shuttle, being much more expensive than the Grand Tour, will become the core program of the American space effort for the 70s. From what I have seen so far, I think this is a wise choice. In fact, I have been backing the Shuttle concept for a number of years. I am prepared to advocate it vigorously in the White House, in the Congress, and before the court of public opinion. I hope each of you and your colleagues throughout American industry, will do the same. Regardless of which company gets which Shuttle or Grand Tour contracts, these very worthy programs deserve the unqualified support of all advocates of a strong space program. If we are going to put most of our eggs in the Shuttle basket,

it had better be the best basket the American -- and European -- aerospace industry can devise, and we had better let the world know we are proud of it.

The aerospace industry has taken a beating recently because of programs that did not turn out quite as expected. I hope we can help remedy that picture by making the Shuttle a classic example of good planning and good performance by Government and industry.

Apollo has been a classic. It is hard to see how we can do better than Apollo, when you think of the magnitude of that undertaking. But we will try to do still better on the Shuttle, and I believe we can, because we do have the rich experience of Apollo behind us.

We can't underestimate the magnitude of the Shuttle effort. The requirements for this program have been set very high. It is important that we not start major development until we are sure of the direction we want to go. And it is important that we proceed at an optimum pace, and avoid costly slowdowns due to either technological shortsightedness or stop and go funding.

We must be prepared to carry out this major development project on schedule and within the cost estimates made at the time we move out. Failure to do so could be hazardous to our viability -- the viability of NASA and the viability of the aerospace industry.

For this reason, we will take as much time as we need right now to be sure we make the right decisions. The FY 1972 budget now before Congress gives us that flexibility. Money requested for the Shuttle in FY 1972 can go either for starting development or for more design work, if it turns out more design work is needed.

I say again, to those of you who are working actively on the Shuttle, and to all others who might have pertinent suggestions or comments, let's think this thing through right, let's not go off half-cocked on the Shuttle. We are all of us going to be aboard it, in one way or another. If anything goes wrong with that Shuttle, it is going to be a truly Titanic disaster for all of us. Having said that, I'm going to relax a bit. This new program is in good hands, at NASA and in the aerospace industry.

I should say, too, that we are not committed at this time to a two-stage fully reusable concept for the Shuttle, although it is the most attractive approach from many standpoints, has received the most study, and has been used as our concrete example in discussing the Shuttle program with Congress and the public.

But I insist that we continue to consider the various possibilities as cold-blooded engineers. (Are there any other kind?) I am going to work hard selling this program, in our own country and in Western Europe, and I want to be sure that we have the best technical solutions to all the problems involved; that we forsee the <u>total</u> development cost; that we have a good

idea what the recurring costs of operation will be; and that the peak funding requirements will be consistent with the political realities of the 70s and with the needs of other programs.

But I don't want us to become slaves of our own cost-effectiveness studies. They are important as yardsticks, as a sort of compass to assure us we are on a reasonable course. But we must keep in mind that we are not trying to justify the Shuttle as a money-making project, but as a new capability of great promise that the country needs by the end of this decade. I believe that in the long run the Shuttle will be a money-maker. When it flies it will demonstrate its usefulness and new economic uses of space just as the DC-3 put civil aviation on an economic basis, but this is a proposition we cannot prove in advance in the systems analysis game. History will prove this point for us; in the meantime, we must make the case that the cost is reasonable and the potential benefits are great.

The response in Congress on the Shuttle has been very good, so far. We have strong support in both our House and Senate Space Committees, both of which have recommended total NASA authorizations above the President's budget and strongly support the Space Shuttle. There will be opposition on the floor from predictable sources, and the Appropriations Committee will undoubtedly be concerned with the total level of NASA appropriations. We have a hard fight ahead, but at this time I am reasonably confident that we can get support for the

Shuttle Program and an overall total NASA Budget which will enable us to move ahead on the Shuttle in FY 1972 as proposed in the President's budget.

The current status of our work in NASA on the Shuttle is this: We are in the process of analyzing in depth the study results that are emerging from the Phase-B studies and the several alternative and contributing studies completed and underway. As I mentioned before, we are looking carefully at the full range of technical alternatives and alternative program plans. We are looking at specific technical problems, system performance, total program costs, and especially at peak future annual funding requirements.

When will we be ready to make a decision? As I have said, I am sure that it is more important to do the job right than to do it quickly. I am hopeful that the proper course to follow will become clear to us early this summer. At this point, whenever it occurs, we will want to consult with industry, as well as with our advisory groups, as we approach decisions within the Executive Branch. If possible, we would like to get these decisions made by the end of the summer and

move out promptly with a request for proposals for the Shuttle system at that time. If it proves to take longer for us to determine the course we believe should be followed, or if the decision process in the Executive Branch proves to take longer, we in NASA nevertheless face a key decision point early this fall -- when I must submit NASA's recommendations for the FY 1973 budget. Thus, in effect, early summer to early fall is the time frame within which we in NASA will be working out the course we believe should be followed on the Shuttle.

At the same time, there is also activity in two other important areas. The industry responses to the requests for proposals for development of the main engine of the Shuttle system are now being evaluated. As you know, NASA has funds in the FY 1971 appropriation for design of the Shuttle Engine, and has requested funds in the FY 1972 budget for proceeding with hardware development of the Shuttle Engine. Our planning has been based on proceeding with engine development prior to and largely independent of the question of the configuration of the Shuttle itself. This is one of the questions I am giving special consideration to as I get myself up to speed on the entire Shuttle Program. I recognize the importance of an early

start on development of a long lead time major propulsion system and the desirability of moving ahead promptly with Shuttle Engine development in accordance with our plan if we can.

The other important activity that is proceeding in parallel with our consideration of the basic Shuttle decision relates to the possibilities of international participation in the Shuttle program. I will not discuss this in detail except to say that, at the present time, the main concern of the Europeans relates to the conditions under which the United States will provide launches, on a reimbursable basis, of European satellites in the period before the Shuttle system is available. I am hopeful that something can be worked out that will be acceptable to both the Europeans and the United States and that we can soon move on the next steps of receiving from the Europeans a specific proposal on the participation they would propose and of considering whether their proposals -- or new proposals that might be negotiated -- would be acceptable to the United States.

In the meantime, we do not intend to let the possibilities or problems of European participation in the Shuttle delay our

own planning and decisions. The prospect of the Shuttle as a truly international development is very attractive from many standpoints, but the Shuttle is also a national need of the United States, and we should proceed on that basis even if our generous offers to let others participate do not lead to co-operative arrangements acceptable to all parties.

So much for where we stand on the Space Shuttle. Incidentally, I wish we had a better name for the Shuttle, it is short and handy and slowly becoming known to the public, but it is not truly descriptive. I guess the name Shuttle came about when we were thinking of a vehicle that would ply back and forth between Earth and a large Space Station. But the vehicle we are working on today is much more than that.

As you know, it will be this country's primary launch vehicle -- replacing all of our present launch vehicles, except maybe the Scout for very small payloads and the Saturn V, or something like it, for very heavy payloads that cannot be broken down into Shuttle-sized packages. And the Shuttle can also be outfitted as an orbital laboratory for experiments or operations requiring a stay in space of up to seven days.

This is an important point. The Shuttle will be a real

space vehicle in its own right, as well as a launch vehicle and a space transportation system. In short, the Shuttle will be our first true aerospace vehicle. It is indeed a worthy challenge to the aerospace industry.

I strongly suspect that what we now call the Shuttle will still be called the Shuttle ten years from now, but if you have any suggestions for a more descriptive name that will catch on, please let me know.

Well, I know I don't have to sell this audience on the Shuttle, and I promise not to talk any more about it today except to add this one thought. The Shuttle very neatly avoids the dilemma of whether we stress manned or unmanned space activities. With the Shuttle we stress both. The Shuttle will be manned; it will greatly increase our manned space flight capabilities for civilian or military purposes; and at the same time it will vastly increase the effectiveness of our unmanned applications and scientific satellites. How could I not be enthusiastic about a program like that? For dilemma-solving, there's nothing to match it on any college campus I know of.

Chairman George Miller of the House Committee on Science and Astronautics summed up the virtues of the Shuttle very well in a speech before an international audience of space engineers in Rome earlier this month.

"The real key to the future of space exploration and scientific endeavors in space," the Chairman said, "is the development of low cost, recoverable, and reusable systems." "Up until now," he said, "we have been trying to get into space the hard way -- without the key. The Space Shuttle may be the key we need."

I can assure the Chairman that if we all do our homework properly, the Space Shuttle will indeed be the key we need.

During my pre-confirmation hearing before the Senate Committee I was gently reminded that the first A in NASA stands for Aeronautics. I am well aware of this, and I want my leadership at NASA to clearly reflect it. It is another virtue of the Shuttle (which I wasn't going to mention again) that it advances aeronautical as well as space technology. And I will repeat here what I said in my press conference last week in answer to a question about possible Congressional opposition to the short take off and landing (STOL) experimental aircraft

that NASA proposes to build:

"This is an experimental plane (not a commercial development), and it is long overdue, in my judgment. It should have been done years ago. But I'm happy to see that the program is finally off the ground, and I hope there won't be undue pressure to slow it down."

I was glad to get that on the record at the press conference, and I am glad to say it again to this audience. I will not forget that first A in NASA.

Now I would like to come back to space benefits for a moment, to stress my very strong belief in the proposition that the future prosperity of this country depends in large part on continued development of high technology. This has been true in the past. It is even more true today.

History shows us very plainly that American inventiveness, starting in the 19th Century, has had a revolutionary impact on this country and the world.

Thanks to our inventions -- and to the enterprise system that stimulated them and exploited them for the good of the people -- the United States has become the strongest nation in the world in every way -- economically, scientifically,

militarily, and perhaps even culturally, although we are a very young nation to be aspiring to cultural greatness.

In this century, world leadership in nearly every important area of human endeavor has shifted from Europe to America. Now, under the stimulus of the common market and their own desire to be technological pioneers, the Europeans are challenging our leadership. The Japanese, the Chinese, the Russians, and many other countries and areas of the world are also studying the secrets of our success, and inventing some of their own. This competition is good for all of us, especially if we can succeed in damping down its military and ideological aspects.

Economic strength is the basis for all our other strengths, and the basis of our power to do good in the world, at home and abroad. Our flourishing culture, our great scientific advances, our ability to defend democracy and freedom -- these all derive from our economic strength. Now maybe it is heresy for an ex-university president to maintain that science is dependent on a strong economy, and not the other way around. But I shall say it anyway. This belief in the necessity for a strong

economic foundation is part of the way of life I grew up in.

Now the key to success in a great modern industrial state is productivity. And in the modern industrial state, it has to be stated as rising productivity. And the best way to raise our productivity is to advance our technology.

And I don't know of any organized activity in America today that can produce more useful new technology per dollar invested than the NASA space program can.

Can I prove this? As Administrator I am going to try. I don't think we should spend all of our time looking for individual examples of new technology which appeared first in the space program and then moved into the general economy. There have been many, but on an individual basis they tend to be small advances and the public does not always understand or appreciate them.

I think we have to look for the benefits of new technology at the other end of the process, by working backward. Let us look at the areas of great technological growth during the last ten years -- computers, communications, medical science, lasers, automatic controls of all kinds, sensors of all kinds, new standards of quality control, and so on.

Let us look at each of these fields and ask the question: Have NASA requirements and NASA procurements played a significant role in the phenomenal technological progress being made in this field? The only honest answer has to be, "You bet they have."

The development of high technology requires scientific and engineering efforts focused on specific goals. Someone with authority -- really the President and Congress -- has to set goals and fund programs to reach those goals. To some extent, defense requirements keep technology moving ahead. But we need to get away from war and the threat of war as the source of technological and industrial progress if we can. And NASA is the answer -- at least the only good answer I know of.

If we did not have the NASA Space and Aeronautics programs, where else except the military could our society turn today for the goals and the funds to generate new aerospace technology for the civilian economy? I have had a good vantage point in the past seven years to sit back and consider the answer to that question. I cannot think of a better engine for generating technological progress in the aerospace field -- or in any related field -- than we already have operating in

NASA. I do not see any end to NASA's potential usefulness as the catalyst for America's economic future.

When I hear or read of the misguided effort to cut the space program still further than it has already been cut, I am continually amazed: Every country in the world seems to recognize the value of new technology but the United States. This is perhaps an exaggeration, but at the present time there is more than a grain of truth in it.

Many of our university students, and their elders as well, are primarily concerned these days with the great social problems that are still unsolved -- or better, not completely solved -- in this rich powerful country of ours. I think these critics regard space as quote irrelevant unquote. Well, they are wrong. For the solutions they seek, and many of them are truly and commendably idealistic, depend really on a strong economy with rising productivity, and in my new work at NASA I sincerely believe I can do as much to increase productivity and thereby help solve social problems as I could in any other job, or on any soapbox, in the country.

Call it intuition, or what you will, but I believe that space is relevant in today's troubled world. If we can move ahead with the plans we have at NASA, we can help make this a better country in a better world before this decade is out.

Thank you.

# # # #

P71-10308

May 20, 1971
6 p.m.

Dr. Fletcher's speech to the Twenty-fifth Annual Conference
Aerospace Industries Ass'n
Williamsburg, Va.

I AM VERY PLEASED TO HAVE THIS EARLY OPPORTUNITY TO MEET WITH THE BOARD OF GOVERNORS OF THE AEROSPACE INDUSTRIES ASSOCIATION TO EXCHANGE VIEWS AND GET BETTER ACQUAINTED.

I AM GLAD THIS IS A RATHER INFORMAL OCCASION. IT IS NOT THE TIME FOR ME TO ATTEMPT TO MAKE DEFINITIVE POLICY STATEMENTS ON THE FUTURE OF THE NATION'S SPACE AND AERONAUTICS PROGRAM. BUT I DO HAVE SOME CONVICTIONS AND SOME ENTHUSIASMS THAT I WANT TO CONVEY TO YOU.

THIS IS MY FIRST SPEECH AS NASA ADMINISTRATOR, BUT I HAVE ALREADY HAD MY BAPTISM OF FIRE. AFTER ONE WEEK ON THE JOB AT NASA I HAD MY FIRST PRESS CONFERENCE, AND THE FIRST QUESTION, RIGHT OFF THE BAT, WAS WHETHER I HAD EVER FELT, AFTER AGREEING TO TAKE THIS JOB, SOMETHING LIKE THE CAPTAIN OF THE TITANIC?

~~NOW WHAT'S GOT MADE THEM ASK A QUESTION LIKE THAT?~~

WELL, ANYWAY, EVERYBODY LAUGHED, AND I GUESS THAT IS AS GOOD A WAY TO LAUNCH A PRESS CONFERENCE AS ANY.

WHATEVER THE IMPLICATIONS OF THE TITANIC QUESTION, MY ANSWER WAS ~~AND IS~~ of course NO! I ~~THINK THE~~ NASA SHIP IS ON THE RIGHT COURSE. WE WILL MOVE FORWARD AT A PRUDENT SPEED. WE MAY NOT BE CARRYING ALL THE FREIGHT WE COULD CARRY, BUT WE ARE IN NO DANGER OF SINKING, EITHER. AMERICA NEEDS PROGRESS IN SPACE AS MUCH, OR MORE, THAN EVER BEFORE. THE WORLD NEEDS IT. THAT IS THE MESSAGE WE MUST GET ACROSS.

start reading

AS I SIZE UP THE NASA SITUATION TODAY, AFTER 2-1/2 WEEKS ON THE JOB, I SEE TWO IMPORTANT POINTS THAT NEED TO BE STRESSED.

FIRST, WE ARE IN A MUCH STRONGER POSITION THIS YEAR BECAUSE WE HAVE NOT ONLY SOUND PROGRAMS UNDERWAY, BUT ALSO PROGRAMS WITH GREAT POTENTIAL PLANNED FOR THIS DECADE AND THE NEXT. POST-APOLLO PLANNING HAS BEEN A LONG AND DIFFICULT PROCESS. I THINK AN EXCELLENT JOB HAS BEEN DONE IN SURVEYING THE MANY POSSIBILITIES FOR USEFUL MISSIONS IN SPACE IN THIS DECADE AND THE NEXT AND IN IDENTIFYING THE MOST REWARDING ONES. I CONGRATULATE ALL WHO PARTICIPATED, AND I KNOW THAT INCLUDES ALL OF YOU. IT IS A TREMENDOUS ADVANTAGE FOR ME, AS THE NEW ADMINISTRATOR, TO HAVE SO MUCH OF THE BASIS FOR PLANNING FOR THIS DECADE ALREADY DONE, AND DONE SO WELL.

Space Exploration

NOW MY SECOND POINT. DESPITE OUR ONGOING PROGRAMS, DESPITE OUR SENSIBLE PLANNING FOR THE FUTURE, WE ARE STILL IN A PERIOD OF UNCERTAINTY. OUR MAJOR NEW PROGRAMS FOR THIS DECADE -- THE SHUTTLE AND THE GRAND TOUR -- ARE STILL IN THE STUDY STAGE; AND NERVA IS IN A SORT OF "HOLDING PATTERN." I EXPECT FAVORABLE DECISIONS TO MOVE INTO DEVELOPMENT ON EACH OF THESE MAJOR NEW PROGRAMS IN DUE COURSE. BUT THE QUESTION IS WHEN, AND WITH WHAT SPEED, AND FOR WHAT REASONS.

LOGICAL AND NECESSARY AS EACH OF THESE MAJOR NEW PROGRAMS MAY SEEM TO US, WE STILL HAVE TO CONVINCE THE PRESIDENT AND CONGRESS AT EACH STEP AND GAIN A STRONG MEASURE OF PUBLIC SUPPORT ON EACH PROGRAM.

THE MOMENTUM BUILT UP IN THE 60'S WILL SURELY ENABLE US TO COMPLETE THE APOLLO PROGRAM WITH THREE MORE FLIGHTS TO THE MOON; AND TO CARRY OUT VERY IMPORTANT EXPERIMENTS IN SKYLAB; AND TO SEND THE ADVANCED VIKING SPACECRAFT TO MARS.

BUT WITH THE SHUTTLE, THE GRAND TOUR, AND NERVA, WE GET INTO A NEW BALL GAME. I DON'T NEED TO TELL YOU ALL THE WAYS IN WHICH THE SITUATION TODAY IS DIFFERENT FROM THE SITUATION 10 YEARS AGO WHEN PRESIDENT KENNEDY WENT BEFORE CONGRESS TO RECOMMEND THE LUNAR LANDING GOAL. FOR ONE THING, THE VERY

SUCCESS

OF APOLLO IN DEMONSTRATING AMERICAN SPACE LEADERSHIP HAS TAKEN MUCH OF THE SENSE OF URGENCY OUT OF THE SPACE PROGRAM SO FAR AS THE GENERAL PUBLIC IS CONCERNED.

BUT HAVE THE BASIC REASONS FOR A SIGNIFICANT AMERICAN INVESTMENT IN CONTINUED SPACE PROGRESS REALLY CHANGED? I DON'T THINK SO. I THINK THEY ARE AS VALID TODAY AS THEY WERE 10 YEARS AGO, PERHAPS MORE SO.

PERHAPS BECAUSE THEY DO REMAIN THE SAME WE GET TIRED OF TALKING ABOUT THEM. BUT IF WE CANNOT MAKE THE CASE FOR CONTINUED SPACE PROGRESS FRESH AND INTERESTING AND CONVINCING, THEN WHO CAN? WHO WILL? DO WE HAVE TO DEPEND ON THE RUSSIANS? USSR PUBLIC RELATIONS

I KNOW THAT ALL OF YOU HAVE BEEN WRESTLING WITH THIS PROBLEM OF WINNING AND HOLDING PUBLIC SUPPORT FOR THE SPACE PROGRAM FOR A GOOD MANY YEARS. YOU HAVE WORKED ON THIS PROBLEM AS CORPORATE OFFICIALS FOR BUSINESS REASONS; AND YOU HAVE WORKED ON IT, TOO, AS INDIVIDUALS CONCERNED ABOUT THE FUTURE OF YOUR COUNTRY.

I THINK WE NEED TO DO A BETTER JOB IN WINNING PUBLIC SUPPORT FOR THE NEW NASA PROGRAMS. I WISH I COULD TELL YOU HOW. MAYBE YOU CAN TELL ME. THIS IS SOMETHING I INTEND TO GIVE

HIGH PRIORITY TO AS ADMINISTRATOR. THIS COUNTRY NEEDS SPACE PROGRAMS THAT MOVE OUT VIGOROUSLY TO CREATE NEW TECHNOLOGY. A SPACE EFFORT THAT LIMPS ALONG ON YESTERDAY'S KNOWHOW WILL NOT DO MUCH FOR THE COUNTRY. A SLOW PROGRAM MAY COST LESS, BUT BE WORTH NOTHING IN TERMS OF MEETING THE COUNTRY'S NEEDS. AND A SLOW PROGRAM -- OR NO PROGRAM -- IS ALL WE ARE GOING TO HAVE WITHOUT STRONG SUPPORT FROM THE PUBLIC.

THE STORY OF WHAT WE DO IN SPACE IS BEING WELL TOLD. I SEE PLENTY OF EVIDENCE OF THAT. BUT THE MORE WE INFORM PEOPLE ABOUT WHAT WE ARE DOING AND WHAT IT IS COSTING THEM AS TAXPAYERS, THE MORE WE NEED TO EXPLAIN WHY WE DO IT.

THERE IS NO NEED TO SEARCH FOR A SINGLE OVERRIDING JUSTIFICATION FOR THE SPACE EFFORT AS A WHOLE. THERE ISN'T ANY -- EXCEPT PERHAPS AT A TIME OF GREAT NATIONAL ALARM, AND WE ARE NOT IN SUCH A PERIOD NOW. SPACE BENEFITS TAKE MANY DIFFERENT FORMS, TANGIBLE AND INTANGIBLE. INDIVIDUAL CITIZENS MAY BE IMPRESSED BY SOME OF THESE BENEFITS AND NOT BY OTHERS. THE PRESIDENT AND THE CONGRESS HAVE TO TRY TO WEIGH THE WHOLE PACKAGE.

MANY OF US WHO BELIEVE WHOLEHEARTEDLY IN THE SPACE PROGRAM DON'T STOP TO SPELL OUT THE REASONS WHY. WE HAVE THE STRONG INSTINCTIVE FEELING -- ~~THE SO-CALLED GUT FEELING~~ -- THAT SPACE IS IMPORTANT. BUT IT IS NOT ALWAYS EASY, WHEN A MICROPHONE IS SUDDENLY THRUST IN FRONT OF YOU, TO ARTICULATE SUCH FEELINGS.

AGAIN AND AGAIN, I AM GOING TO GET, AND YOU ARE GOING TO GET, THE INNOCENT SOUNDING QUESTION LIKE THIS ONE AT MY PRESS CONFERENCE LAST WEEK:

"DR. FLETCHER, YOU SAID A FEW QUESTIONS AGO, OR A FEW ANSWERS AGO, THAT THE SPACE AND AERONAUTICS PROGRAM WAS CRITICALLY IMPORTANT TO THE COUNTRY IN MANY WAYS. I WAS WONDERING IF YOU WOULD ELABORATE ON THAT A LITTLE BIT, PARTICULARLY KEEPING IN MIND THE QUESTION THAT SOME PEOPLE ASK: WHAT DIFFERENCE WOULD IT MAKE IF THE SPACE PROGRAM WAS DISCONTINUED ENTIRELY?"

I THINK IT PAYS TO HAVE A WELL THOUGHT OUT ANSWER TO THAT QUESTION. IT'S THE $6 BILLION DOLLAR QUESTION. IT'S A FAIR QUESTION. IT DESERVES AN ANSWER. AND THE PRESS WANTS IT IN ONE MINUTE OR LESS.

I THINK EACH OF US SHOULD HAVE HIS PERSONAL LIST OF FOUR OR FIVE REASONS WHY THIS COUNTRY, IN 1971, SHOULD CONTINUE TO MAKE A SUBSTANTIAL INVESTMENT IN SPACE ACTIVITIES. HERE'S MINE:

1. SOME SATELLITES, LIKE WEATHER AND COMMUNICATIONS SATELLITES, PAY FOR THEMSELVES BY DOING USEFUL WORK. WE SHOULD INVENT AND FLY MORE SELF-SUPPORTING SATELLITES.

2. WE ARE SEEKING AND GETTING VALUABLE SCIENTIFIC KNOWLEDGE FROM SPACE WE COULD NOT GET IN ANY OTHER WAY -- VALUABLE NEW KNOWLEDGE ABOUT THE EARTH AND ITS ATMOSPHERE, THE SUN AND THE PLANETS, AND THE UNIVERSE. AND ABOUT MAN HIMSELF.

3. OUR NATIONAL SECURITY IS AT STAKE IN SPACE. IT WOULD NOT BE SAFE FOR THE UNITED STATES, WITH ITS GREAT RESPONSIBILITIES FOR WORLD PEACE, TO LAG BEHIND ANY OTHER COUNTRY IN SPACE TECHNOLOGY. THIS IS AN AXIOM WE DID NOT QUIBBLE ABOUT IN THE 60'S AND SHOULD NOT QUIBBLE ABOUT IN THE 70'S. A STRONG SPACE PROGRAM OFFERS MANY NEW OPPORTUNITIES FOR SIGNIFICANT INTERNATIONAL COOPERATION AND PROMOTES THE CAUSE OF WORLD PEACE IN THIS WAY, TOO.

4. THE SPACE PROGRAM HAS PROVEN TO BE AN EXCELLENT HOTBED FOR FORCING NEW TECHNOLOGY, WHICH IN TURN RAISES OUR NATIONAL PRODUCTIVITY AND PROSPERITY AND INCREASES OUR ABILITY TO SOLVE PRESSING SOCIAL PROBLEMS OF TODAY'S URBAN SOCIETY. THIS IS A MESSAGE WE REALLY NEED TO GET ACROSS. I WILL RETURN TO THIS POINT LATER.

5. LOOKING BEYOND THE MATERIAL BENEFITS, I SAY SPACE EXPLORATION IS NEEDED AS INSPIRATION FOR MODERN MAN. WE CANNOT MEASURE THIS, WE MAY NOT BE FULLY AWARE OF IT, BUT I THINK WE ARE INSPIRED, AND OUR CHILDREN ARE INSPIRED, TO BE LIVING IN AN AGE WHEN MEN FIRST MOVED OUT INTO SPACE AND BEGAN THE EXPLORATION OF OUR SOLAR SYSTEM. I THINK WE WOULD BE ASHAMED OF OURSELVES, AS A SOCIETY, IF WE WITHDREW FROM SPACE EXPLORATION NOW AFTER SUCH AN AUSPICIOUS BEGINNING.

THESE ARE NOT THE ONLY BENEFITS OF SPACE ACTIVITY. THERE ARE MANY OTHERS. BUT THESE ARE THE FIVE I MENTION FIRST, AND WHICH I COULD SUPPORT WITH A DETAILED DISCUSSION.

THE PRESIDENT HAS GIVEN MUCH THOUGHT TO THE PROBLEM OF IDENTIFYING AND ARTICULATING SPACE BENEFITS. HIS STATEMENT OF MARCH 7, 1970, ON THE FUTURE OF THE UNITED STATES SPACE PROGRAM

IS A THOUGHTFUL AND BALANCED STATEMENT THAT WILL STAND THE TEST OF TIME. IT GIVES US THE FRAMEWORK AND APPROACH WE NEED. OUR JOB, NASA'S AND YOURS, IS TO FILL IN THE DETAILS WITH SPECIFIC PROGRAMS THAT ARE SOUND IN CONCEPT AND WILL GENERATE AND RECEIVE THE SUPPORT WE NEED.

IN OUR DISCUSSION WITH THE PUBLIC, WE NEED TO EXPLAIN AND JUSTIFY THE SPACE PROGRAM AS A WHOLE. BUT WE MIGHT GET BETTER RESULTS IF WE ALSO MADE A GREATER EFFORT TO IDENTIFY THE EXPECTED BENEFITS FROM EACH MAJOR PART OF IT. IN OTHER WORDS, LET EACH PART OF THE PROGRAM RISE OR FALL ON ITS OWN MERITS.

FOR EXAMPLE, WE MIGHT ASK THE FOLLOWING QUESTIONS ABOUT EACH PROSPECTIVE NEW PROGRAM BEFORE IT GOES INTO DEVELOPMENT:

-- WILL IT PAY FOR ITSELF BY DOING USEFUL WORK?

-- HOW VALUABLE IS THE NEW SCIENTIFIC KNOWLEDGE IT IS EXPECTED TO PRODUCE? AND CAN THIS BE OBTAINED ONLY FROM SPACE?

-- IS IT IMPORTANT FOR NATIONAL SECURITY?

-- DOES IT LEND ITSELF TO WIDE INTERNATIONAL COOPERATION?

-- WILL IT FORCE THE CREATION OF VALUABLE NEW TECHNOLOGY?

-- WILL IT STIR THE INTEREST OF THE AMERICAN PUBLIC?

-- WILL IT BE THE KIND OF PROGRAM THE TAXPAYER IS ABLE TO IDENTIFY WITH AND APPROVE OF? WILL IT DO SOMETHING FOR OUR SPIRITS, AS INDIVIDUALS AND AS A SOCIETY?

NOT EVERY CANDIDATE PROJECT NEED SCORE HIGHLY ON EVERY QUESTION. BUT IF THESE GUIDELINES ARE APPLIED WITH COMMON SENSE AND DISCRETION TO EACH CANDIDATE PROJECT, WE ARE MUCH MORE LIKELY TO END UP WITH AN OVERALL PROGRAM THAT WE CAN ADVOCATE VIGOROUSLY AND CONVINCINGLY IN OUR DISCUSSIONS WITH THE GENERAL PUBLIC -- AND WITH THE CONGRESS, I MIGHT ADD.

I DO NOT MEAN TO IMPLY THAT WE HAVE NOT ASKED SUCH QUESTIONS IN THE PAST. BUT IN OUR PUBLIC DISCUSSIONS OF THE WORTH OF THE SPACE PROGRAM WE HAVE TENDED TO APPLY SUCH QUESTIONS TO THE PROGRAM AS A WHOLE RATHER THAN TO ITS DISCRETE PARTS. TO PUT IT BLUNTLY, I DON'T BELIEVE WE CAN JUSTIFY A PROGRAM LIKE APOLLO BY TALKING ABOUT THE BENEFITS OF WEATHER SATELLITES. WEATHER SATELLITES JUSTIFY THEMSELVES, AND APOLLO HAS ITS OWN SPECIAL RATIONALE.

MAYBE ONE REASON I LIKE THIS LIST OF QUESTIONS IS BECAUSE THE SPACE SHUTTLE SCORES SO WELL. IN FACT, IT SCORES 100 PER CENT. AND THAT IS INDEED FORTUNATE, BECAUSE IT LOOKS LIKE THE SPACE SHUTTLE IS GOING TO BE THIS COUNTRY'S MAIN SPACE

EFFORT

IN THE DECADE OF THE 70s. WE COULD DO A LOT WORSE. WE COULD DO MORE, OF COURSE, BUT I AM CONVINCED WE COULDN'T HAVE A BETTER LEAD PROGRAM.

AS I MENTIONED EARLIER, AND AS YOU WELL KNOW, WE FACE DECISIONS ON STARTING SERIOUS DEVELOPMENT OF THE SHUTTLE, THE GRAND TOUR, ~~THE SPACE STATION~~, AND NERVA.

THE ADMINISTRATION HAS NOT WANTED TO BECOME COMMITTED TO HEAVY DEVELOPMENT COSTS ON SEVERAL MAJOR PROGRAMS SIMULTANEOUSLY. THERE IS SOME STRONG SENTIMENT IN CONGRESS FOR DOING MORE THAN THE ADMINISTRATION WANTS -- FOR EXAMPLE, MOVING FASTER ON NERVA. AND THERE ARE OTHERS WHO WILL OPPOSE ANY NEW PROGRAM.

IT NOW APPEARS MORE AND MORE LIKELY THAT OUR MAJOR EFFORT IN SPACE IN THIS DECADE, OR AT LEAST FOR THE NEXT FEW YEARS, IS GOING TO BE CONCENTRATED ON TWO NEW PROGRAMS -- THE SPACE SHUTTLE AND THE GRAND TOUR. AND WE WILL HAVE TO FIGHT HARD TO GET AND KEEP THESE TWO.

IF WE ARE SUCCESSFUL, THE SHUTTLE, BEING MUCH MORE EXPENSIVE THAN THE GRAND TOUR, WILL BECOME THE CORE PROGRAM OF THE AMERICAN SPACE EFFORT FOR THE 70s. FROM WHAT I HAVE SEEN SO FAR, I THINK THIS IS A WISE CHOICE. IN FACT, I HAVE BEEN BACKING THE SHUTTLE CONCEPT FOR A NUMBER OF YEARS. I AM PREPARED

TO ADVOCATE IT VIGOROUSLY IN THE WHITE HOUSE, IN THE CONGRESS, AND BEFORE THE COURT OF PUBLIC OPINION. I HOPE EACH OF YOU, AND YOUR COLLEAGUES THROUGHOUT AMERICAN INDUSTRY, WILL DO THE SAME. REGARDLESS OF WHICH COMPANY GETS WHICH SHUTTLE OR GRAND TOUR CONTRACTS, THESE VERY WORTHY PROGRAMS DESERVE THE UNQUALIFIED SUPPORT OF ALL ADVOCATES OF A STRONG SPACE PROGRAM. IF WE ARE GOING TO PUT MOST OF OUR EGGS IN THE SHUTTLE BASKET, IT HAD BETTER BE THE BEST BASKET THE AMERICAN -- AND EUROPEAN -- AEROSPACE INDUSTRY CAN DEVISE, AND WE HAD BETTER LET THE WORLD KNOW WE ARE PROUD OF IT.

THE AEROSPACE INDUSTRY HAS TAKEN A BEATING RECENTLY BECAUSE OF PROGRAMS THAT DID NOT TURN OUT QUITE AS EXPECTED. I HOPE WE CAN HELP REMEDY THAT PICTURE BY MAKING THE SHUTTLE A CLASSIC EXAMPLE OF GOOD PLANNING AND GOOD PERFORMANCE BY GOVERNMENT AND INDUSTRY.

APOLLO HAS BEEN A CLASSIC. IT IS HARD TO SEE HOW WE CAN DO BETTER THAN APOLLO, WHEN YOU THINK OF THE MAGNITUDE OF THAT UNDERTAKING. BUT WE WILL TRY TO DO STILL BETTER ON THE SHUTTLE, AND I BELIEVE WE CAN, BECAUSE WE DO HAVE THE RICH EXPERIENCE OF APOLLO BEHIND US.

WE CAN'T UNDERESTIMATE THE MAGNITUDE OF THE SHUTTLE EFFORT. THE REQUIREMENTS FOR THIS PROGRAM HAVE BEEN SET VERY HIGH. IT IS IMPORTANT THAT WE NOT START MAJOR DEVELOPMENT UNTIL WE ARE SURE OF THE DIRECTION WE WANT TO GO. AND IT IS IMPORTANT THAT WE PROCEED AT AN OPTIMUM PACE, AND AVOID COSTLY SLOWDOWNS DUE TO EITHER TECHNOLOGICAL SHORTSIGHTEDNESS OR STOP AND GO FUNDING.

FUNDING

WE MUST BE PREPARED TO CARRY OUT THIS MAJOR DEVELOPMENT PROJECT ON SCHEDULE AND WITHIN THE COST ESTIMATES MADE AT THE TIME WE MOVE OUT. FAILURE TO DO SO COULD BE HAZARDOUS TO OUR VIABILITY -- THE VIABILITY OF NASA AND THE VIABILITY OF THE AEROSPACE INDUSTRY.

FOR THIS REASON, WE WILL TAKE AS MUCH TIME AS WE NEED RIGHT NOW TO BE SURE WE MAKE THE RIGHT DECISIONS. THE FY 1972 BUDGET NOW BEFORE CONGRESS GIVES US THAT FLEXIBILITY. MONEY REQUESTED FOR THE SHUTTLE IN FY 1972 CAN GO EITHER FOR STARTING DEVELOPMENT OR FOR MORE DESIGN WORK, IF IT TURNS OUT MORE DESIGN WORK IS NEEDED.

Appropriations & Budgets

I SAY AGAIN, TO THOSE OF YOU WHO ARE WORKING ACTIVELY ON THE SHUTTLE, AND TO ALL OTHERS WHO MIGHT HAVE PERTINENT SUGGESTIONS

OR COMMENTS, LET'S THINK THIS THING THROUGH RIGHT, LET'S NOT GO OFF HALF-COCKED ON THE SHUTTLE. WE ARE ALL OF US GOING TO BE ABOARD IT, IN ONE WAY OR ANOTHER. IF ANYTHING GOES WRONG WITH THAT SHUTTLE, IT IS GOING TO BE A TRULY TITANIC DISASTER FOR ALL OF US. HAVING SAID THAT, I'M GOING TO RELAX A BIT. THIS NEW PROGRAM IS IN GOOD HANDS, AT NASA AND IN THE AEROSPACE INDUSTRY.

I SHOULD SAY, TOO, THAT WE ARE NOT COMMITTED AT THIS TIME TO A TWO-STAGE FULLY REUSABLE CONCEPT FOR THE SHUTTLE, ALTHOUGH IT IS THE MOST ATTRACTIVE APPROACH FROM MANY STANDPOINTS, HAS RECEIVED THE MOST STUDY, AND HAS BEEN USED AS OUR CONCRETE EXAMPLE IN DISCUSSING THE SHUTTLE PROGRAM WITH CONGRESS AND THE PUBLIC.

BUT I INSIST THAT WE CONTINUE TO CONSIDER THE VARIOUS POSSIBILITIES AS COLD-BLOODED ENGINEERS. (ARE THERE ANY OTHER KIND?) I AM GOING TO WORK HARD SELLING THIS PROGRAM, IN OUR OWN COUNTRY AND IN WESTERN EUROPE, AND I WANT TO BE SURE THAT WE HAVE THE BEST TECHNICAL SOLUTIONS TO ALL THE PROBLEMS INVOLVED; THAT WE FORESEE THE TOTAL DEVELOPMENT COST; THAT WE HAVE A GOOD IDEA WHAT THE RECURRING COSTS OF OPERATION WILL BE; AND

THAT THE PEAK FUNDING REQUIREMENTS WILL BE CONSISTENT WITH THE POLITICAL REALITIES OF THE 70'S AND WITH THE NEEDS OF OTHER PROGRAMS.

BUT I DON'T WANT US TO BECOME SLAVES OF OUR OWN COST-EFFECTIVENESS STUDIES. THEY ARE IMPORTANT AS YARDSTICKS, AS A SORT OF COMPASS TO ASSURE US WE ARE ON A REASONABLE COURSE. BUT WE MUST KEEP IN MIND THAT WE ARE NOT TRYING TO JUSTIFY THE SHUTTLE AS A MONEY-MAKING PROJECT, BUT AS A NEW CAPABILITY OF GREAT PROMISE THAT THE COUNTRY NEEDS BY THE END OF THIS DECADE. I BELIEVE THAT IN THE LONG RUN THE SHUTTLE WILL BE A MONEY-MAKER. WHEN IT FLIES IT WILL DEMONSTRATE ITS USEFULNESS AND NEW ECONOMIC USES OF SPACE JUST AS THE DC-3 PUT CIVIL AVIATION ON AN ECONOMIC BASIS, BUT THIS IS A PROPOSITION WE CANNOT PROVE IN ADVANCE IN THE SYSTEMS ANALYSIS GAME. HISTORY WILL PROVE THIS POINT FOR US; IN THE MEANTIME, WE MUST MAKE THE CASE THAT THE COST IS REASONABLE AND THE POTENTIAL BENEFITS ARE GREAT.

THE RESPONSE IN CONGRESS ON THE SHUTTLE HAS BEEN VERY GOOD, SO FAR. WE HAVE STRONG SUPPORT IN BOTH OUR HOUSE AND SENATE SPACE COMMITTEES, BOTH OF WHICH HAVE RECOMMENDED TOTAL NASA AUTHORIZATIONS ABOVE THE PRESIDENT'S BUDGET AND STRONGLY

SUPPORT

THE SPACE SHUTTLE. THERE WILL BE OPPOSITION ON THE FLOOR FROM PREDICTABLE SOURCES, AND THE APPROPRIATIONS COMMITTEE WILL UNDOUBTEDLY BE CONCERNED WITH THE TOTAL LEVEL OF NASA APPROPRIATIONS. WE HAVE A HARD FIGHT AHEAD, BUT AT THIS TIME I AM REASONABLY CONFIDENT THAT WE CAN GET SUPPORT FOR THE SHUTTLE PROGRAM AND AN OVERALL TOTAL NASA BUDGET WHICH WILL ENABLE US TO MOVE AHEAD ON THE SHUTTLE IN FY 1972 AS PROPOSED IN THE PRESIDENT'S BUDGET.

THE CURRENT STATUS OF OUR WORK IN NASA ON THE SHUTTLE IS THIS: WE ARE IN THE PROCESS OF ANALYZING IN DEPTH THE STUDY RESULTS THAT ARE EMERGING FROM THE PHASE-B STUDIES AND THE SEVERAL ALTERNATIVE AND CONTRIBUTING STUDIES COMPLETED AND UNDERWAY. AS I MENTIONED BEFORE, WE ARE LOOKING CAREFULLY AT THE FULL RANGE OF TECHNICAL ALTERNATIVES AND ALTERNATIVE PROGRAM PLANS. WE ARE LOOKING AT SPECIFIC TECHNICAL PROBLEMS, SYSTEM PERFORMANCE, TOTAL PROGRAM COSTS, AND ESPECIALLY AT PEAK FUTURE ANNUAL FUNDING REQUIREMENTS.

WHEN WILL WE BE READY TO MAKE A DECISION? AS I HAVE SAID, I AM SURE THAT IT IS MORE IMPORTANT TO DO THE JOB RIGHT THAN TO DO IT QUICKLY. I AM HOPEFUL THAT THE PROPER COURSE TO FOLLOW WILL BECOME CLEAR TO US EARLY THIS SUMMER. AT THIS POINT,

WHENEVER IT OCCURS, WE WILL WANT TO CONSULT WITH INDUSTRY, AS WELL AS WITH OUR ADVISORY GROUPS, AS WE APPROACH DECISIONS WITHIN THE EXECUTIVE BRANCH. IF POSSIBLE, WE WOULD LIKE TO GET THESE DECISIONS MADE BY THE END OF THE SUMMER AND MOVE OUT PROMPTLY WITH A REQUEST FOR PROPOSALS FOR THE SHUTTLE SYSTEM AT THAT TIME. IF IT PROVES TO TAKE LONGER FOR US TO DETERMINE THE COURSE WE BELIEVE SHOULD BE FOLLOWED, OR IF THE DECISION PROCESS IN THE EXECUTIVE BRANCH PROVES TO TAKE LONGER, WE IN NASA NEVERTHELESS FACE A KEY DECISION POINT EARLY THIS FALL -- WHEN I MUST SUBMIT NASA'S RECOMMENDATIONS FOR THE FY 1973 BUDGET. THUS, IN EFFECT, EARLY SUMMER TO EARLY FALL IS THE TIME FRAME WITHIN WHICH WE IN NASA WILL BE WORKING OUT THE COURSE WE BELIEVE SHOULD BE FOLLOWED ON THE SHUTTLE.

AT THE SAME TIME, THERE IS ALSO ACTIVITY IN TWO OTHER IMPORTANT AREAS. THE INDUSTRY RESPONSES TO THE REQUESTS FOR PROPOSALS FOR DEVELOPMENT OF THE MAIN ENGINE OF THE SHUTTLE SYSTEM ARE NOW BEING EVALUATED. AS YOU KNOW, NASA HAS FUNDS IN THE FY 1971 APPROPRIATION FOR DESIGN OF THE SHUTTLE ENGINE, AND HAS REQUESTED FUNDS IN THE FY 1972 BUDGET FOR PROCEEDING WITH HARDWARE DEVELOPMENT OF THE SHUTTLE ENGINE. OUR PLANNING

HAS

BEEN BASED ON PROCEEDING WITH ENGINE DEVELOPMENT PRIOR TO AND LARGELY INDEPENDENT OF THE QUESTION OF THE CONFIGURATION OF THE SHUTTLE ITSELF. THIS IS ONE OF THE QUESTIONS I AM GIVING SPECIAL CONSIDERATION TO AS I GET MYSELF UP TO SPEED ON THE ENTIRE SHUTTLE PROGRAM. I RECOGNIZE THE IMPORTANCE OF AN EARLY START ON DEVELOPMENT OF A LONG LEAD TIME MAJOR PROPULSION SYSTEM AND THE DESIRABILITY OF MOVING AHEAD PROMPTLY WITH SHUTTLE ENGINE DEVELOPMENT IN ACCORDANCE WITH OUR PLAN IF WE CAN.

THE OTHER IMPORTANT ACTIVITY THAT IS PROCEEDING IN PARALLEL WITH OUR CONSIDERATION OF THE BASIC SHUTTLE DECISION RELATES TO THE POSSIBILITIES OF INTERNATIONAL PARTICIPATION IN THE SHUTTLE PROGRAM. I WILL NOT DISCUSS THIS IN DETAIL EXCEPT TO SAY THAT, AT THE PRESENT TIME, THE MAIN CONCERN OF THE EUROPEANS RELATES TO THE CONDITIONS UNDER WHICH THE UNITED STATES WILL PROVIDE LAUNCHES, ON A REIMBURSABLE BASIS, OF EUROPEAN SATELLITES IN THE PERIOD BEFORE THE SHUTTLE SYSTEM IS AVAILABLE. I AM HOPEFUL THAT SOMETHING CAN BE WORKED OUT THAT WILL BE ACCEPTABLE TO BOTH THE EUROPEANS AND THE UNITED STATES AND THAT WE CAN SOON MOVE ON TO THE NEXT STEPS OF

RECEIVING

FROM THE EUROPEANS A SPECIFIC PROPOSAL ON THE PARTICIPATION THEY WOULD PROPOSE AND OF CONSIDERING WHETHER THEIR PROPOSALS -- OR NEW PROPOSALS THAT MIGHT BE NEGOTIATED -- WOULD BE ACCEPTABLE TO THE UNITED STATES.

IN THE MEANTIME, WE DO NOT INTEND TO LET THE POSSIBILITIES OR PROBLEMS OF EUROPEAN PARTICIPATION IN THE SHUTTLE DELAY OUR OWN PLANNING AND DECISIONS. THE PROSPECT OF THE SHUTTLE AS A TRULY INTERNATIONAL DEVELOPMENT IS VERY ATTRACTIVE FROM MANY STANDPOINTS, BUT THE SHUTTLE IS ALSO A NATIONAL NEED OF THE UNITED STATES, AND WE SHOULD PROCEED ON THAT BASIS EVEN IF OUR GENEROUS OFFERS TO LET OTHERS PARTICIPATE DO NOT LEAD TO COOPERATIVE ARRANGEMENTS ACCEPTABLE TO ALL PARTIES.

SO MUCH FOR WHERE WE STAND ON THE SPACE SHUTTLE. INCIDENTALLY, I WISH WE HAD A BETTER NAME FOR THE SHUTTLE. IT IS SHORT AND HANDY AND SLOWLY BECOMING KNOWN TO THE PUBLIC, BUT IT IS NOT TRULY DESCRIPTIVE. I GUESS THE NAME SHUTTLE CAME ABOUT WHEN WE WERE THINKING OF A VEHICLE THAT WOULD PLY BACK AND FORTH BETWEEN EARTH AND A LARGE SPACE STATION. BUT THE VEHICLE WE ARE WORKING ON TODAY IS MUCH MORE THAN THAT.

AS YOU KNOW, IT WILL BE THIS COUNTRY'S PRIMARY LAUNCH VEHICLE -- REPLACING ALL OF OUR PRESENT LAUNCH VEHICLES, EXCEPT MAYBE THE SCOUT FOR VERY SMALL PAYLOADS AND THE SATURN V, OR SOMETHING LIKE IT, FOR VERY HEAVY PAYLOADS THAT CANNOT BE BROKEN DOWN INTO SHUTTLE-SIZED PACKAGES. AND THE SHUTTLE CAN ALSO BE OUTFITTED AS AN ORBITAL LABORATORY FOR EXPERIMENTS OR OPERATIONS REQUIRING A STAY IN SPACE OF UP TO SEVEN DAYS.

THIS IS AN IMPORTANT POINT. THE SHUTTLE WILL BE A REAL SPACE VEHICLE IN ITS OWN RIGHT, AS WELL AS A LAUNCH VEHICLE AND A SPACE TRANSPORTATION SYSTEM. IN SHORT, THE SHUTTLE WILL BE OUR FIRST TRUE AEROSPACE VEHICLE. IT IS INDEED A WORTHY CHALLENGE TO THE AEROSPACE INDUSTRY.

I STRONGLY SUSPECT THAT WHAT WE NOW CALL THE SHUTTLE WILL STILL BE CALLED THE SHUTTLE 10 YEARS FROM NOW, BUT IF YOU HAVE ANY SUGGESTIONS FOR A MORE DESCRIPTIVE NAME THAT WILL CATCH ON, PLEASE LET ME KNOW.

WELL, I KNOW I DON'T HAVE TO SELL THIS AUDIENCE ON THE SHUTTLE, AND I PROMISE NOT TO TALK ANY MORE ABOUT IT TODAY EXCEPT TO ADD THIS ONE THOUGHT. THE SHUTTLE VERY NEATLY AVOIDS THE DILEMMA OF WHETHER WE STRESS MANNED OR UNMANNED SPACE ACTIVITIES. WITH THE SHUTTLE WE STRESS BOTH. THE SHUTTLE WILL

BE

MANNED; IT WILL GREATLY INCREASE OUR MANNED SPACE FLIGHT CAPABILITIES FOR CIVILIAN OR MILITARY PURPOSES; AND AT THE SAME TIME IT WILL VASTLY INCREASE THE EFFECTIVENESS OF OUR UNMANNED APPLICATIONS AND SCIENTIFIC SATELLITES. HOW COULD I NOT BE ENTHUSIASTIC ABOUT A PROGRAM LIKE THAT? FOR DILEMMA-SOLVING, THERE'S NOTHING TO MATCH IT ON ANY COLLEGE CAMPUS I KNOW OF.

CHAIRMAN GEORGE MILLER OF THE HOUSE COMMITTEE ON SCIENCE AND ASTRONAUTICS SUMMED UP THE VIRTUES OF THE SHUTTLE VERY WELL IN A SPEECH BEFORE AN INTERNATIONAL AUDIENCE OF SPACE ENGINEERS IN ROME EARLIER THIS MONTH.

"THE REAL KEY TO THE FUTURE OF SPACE EXPLORATION AND SCIENTIFIC ENDEAVORS IN SPACE," THE CHAIRMAN SAID, "IS THE DEVELOPMENT OF LOW COST, RECOVERABLE, AND REUSABLE SYSTEMS." "UP UNTIL NOW," HE SAID, "WE HAVE BEEN TRYING TO GET INTO SPACE THE HARD WAY -- WITHOUT THE KEY. THE SPACE SHUTTLE MAY BE THE KEY WE NEED."

I CAN ASSURE THE CHAIRMAN THAT IF WE ALL DO OUR HOMEWORK PROPERLY, THE SPACE SHUTTLE WILL INDEED BE THE KEY WE NEED.

(PAUSE)

DURING MY PRE-CONFIRMATION HEARING BEFORE THE SENATE COMMITTEE I WAS GENTLY REMINDED THAT THE FIRST A IN NASA STANDS FOR AERONAUTICS. I AM WELL AWARE OF THIS, AND I WANT MY LEADERSHIP AT NASA TO CLEARLY REFLECT IT. IT IS ANOTHER VIRTUE OF THE SHUTTLE (WHICH I WASN'T GOING TO MENTION AGAIN) THAT IT ADVANCES AERONAUTICAL AS WELL AS SPACE TECHNOLOGY. AND I WILL REPEAT HERE WHAT I SAID IN MY PRESS CONFERENCE LAST WEEK IN ANSWER TO A QUESTION ABOUT POSSIBLE CONGRESSIONAL OPPOSITION TO THE STOL EXPERIMENTAL AIRCRAFT THAT NASA PROPOSES TO BUILD:

"THIS IS AN EXPERIMENTAL PLANE (NOT A COMMERCIAL DEVELOPMENT), AND IT IS LONG OVERDUE, IN MY JUDGMENT. IT SHOULD HAVE BEEN DONE YEARS AGO. BUT I'M HAPPY TO SEE THAT THE PROGRAM IS FINALLY OFF THE GROUND, AND I HOPE THERE WON'T BE UNDUE PRESSURE TO SLOW IT DOWN."

I WAS GLAD TO GET THAT ON THE RECORD AT THE PRESS CONFERENCE, AND I AM GLAD TO SAY IT AGAIN TO THIS AUDIENCE. I WILL NOT FORGET THAT FIRST A IN NASA.

NOW I WOULD LIKE TO COME BACK TO SPACE BENEFITS FOR A MOMENT, TO STRESS MY VERY STRONG BELIEF IN THE PROPOSITION THAT THE FUTURE PROSPERITY OF THIS COUNTRY DEPENDS IN LARGE PART ON

CONTINUED

DEVELOPMENT OF HIGH TECHNOLOGY. THIS HAS BEEN TRUE IN THE PAST. IT IS EVEN MORE TRUE TODAY.

HISTORY SHOWS US VERY PLAINLY THAT AMERICAN INVENTIVENESS, STARTING IN THE 19TH CENTURY, HAS HAD A REVOLUTIONARY IMPACT ON THIS COUNTRY AND THE WORLD.

THANKS TO OUR INVENTIONS -- AND TO THE ENTERPRISE SYSTEM THAT STIMULATED THEM AND EXPLOITED THEM FOR THE GOOD OF THE PEOPLE -- THE UNITED STATES HAS BECOME THE STRONGEST NATION IN THE WORLD IN EVERY WAY -- ECONOMICALLY, SCIENTIFICALLY, MILITARILY, AND PERHAPS EVEN CULTURALLY, ALTHOUGH WE ARE A VERY YOUNG NATION TO BE ASPIRING TO CULTURAL GREATNESS.

IN THIS CENTURY, WORLD LEADERSHIP IN NEARLY EVERY IMPORTANT AREA OF HUMAN ENDEAVOR HAS SHIFTED FROM EUROPE TO AMERICA. NOW, UNDER THE STIMULUS OF THE COMMON MARKET AND THEIR OWN DESIRE TO BE TECHNOLOGICAL PIONEERS, THE EUROPEANS ARE CHALLENGING OUR LEADERSHIP. THE JAPANESE, THE CHINESE, THE RUSSIANS, AND MANY OTHER COUNTRIES AND AREAS OF THE WORLD ARE ALSO STUDYING THE SECRETS OF OUR SUCCESS, AND INVENTING SOME OF THEIR OWN. THIS COMPETITION IS GOOD FOR ALL OF US, ESPECIALLY IF WE CAN SUCCEED IN DAMPING DOWN ITS MILITARY AND IDEOLOGICAL ASPECTS.

ECONOMIC STRENGTH IS THE BASIS FOR ALL OUR OTHER STRENGTHS, AND THE BASIS OF OUR POWER TO DO GOOD IN THE WORLD, AT HOME AND ABROAD. OUR FLOURISHING CULTURE, OUR GREAT SCIENTIFIC ADVANCES, OUR ABILITY TO DEFEND DEMOCRACY AND FREEDOM -- THESE ALL DERIVE FROM OUR ECONOMIC STRENGTH. NOW MAYBE IT IS HERESY FOR AN EX-UNIVERSITY PRESIDENT TO MAINTAIN THAT SCIENCE IS DEPENDENT ON A STRONG ECONOMY, AND NOT THE OTHER WAY AROUND. BUT I SHALL SAY IT ANYWAY. THIS BELIEF IN THE NECESSITY FOR A STRONG ECONOMIC FOUNDATION IS PART OF THE WAY OF LIFE I GREW UP IN.

NOW THE KEY TO SUCCESS IN A GREAT MODERN INDUSTRIAL STATE IS PRODUCTIVITY. AND IN THE MODERN INDUSTRIAL STATE, IT HAS TO BE STATED AS RISING PRODUCTIVITY. AND THE BEST WAY TO RAISE OUR PRODUCTIVITY IS TO ADVANCE OUR TECHNOLOGY.

AND I DON'T KNOW OF ANY ORGANIZED ACTIVITY IN AMERICA TODAY THAT CAN PRODUCE MORE USEFUL NEW TECHNOLOGY PER DOLLAR INVESTED THAN THE NASA SPACE PROGRAM CAN.

CAN I PROVE THIS? AS ADMINISTRATOR I AM GOING TO TRY. I DON'T THINK WE SHOULD SPEND ALL OF OUR TIME LOOKING FOR INDIVIDUAL EXAMPLES OF NEW TECHNOLOGY WHICH APPEARED FIRST IN THE SPACE PROGRAM AND THEN MOVED INTO THE GENERAL ECONOMY.

THERE HAVE BEEN MANY -- we have a list of 10,000 -- list of pages! BUT ON AN INDIVIDUAL BASIS THEY TEND TO BE SMALL ADVANCES AND THE PUBLIC DOES NOT ALWAYS UNDERSTAND OR APPRECIATE THEM.

I THINK WE HAVE TO LOOK FOR THE BENEFITS OF NEW TECHNOLOGY AT THE OTHER END OF THE PROCESS, BY WORKING BACKWARD. LET US LOOK AT THE AREAS OF GREAT TECHNOLOGICAL (gen) GROWTH DURING THE LAST 10 YEARS -- COMPUTERS, COMMUNICATIONS, MEDICAL SCIENCE, LASERS, AUTOMATIC CONTROLS OF ALL KINDS, SENSORS OF ALL KINDS, NEW STANDARDS OF QUALITY CONTROL, AND SO ON.

LET US LOOK AT EACH OF THESE FIELDS AND ASK THE QUESTION:

HAVE NASA REQUIREMENTS AND NASA PROCUREMENTS PLAYED A SIGNIFICANT ROLE IN THE PHENOMENAL TECHNOLOGICAL PROGRESS BEING MADE IN THIS FIELD? THE ONLY HONEST ANSWER HAS TO BE, "YOU BET THEY HAVE."

THE DEVELOPMENT OF HIGH TECHNOLOGY REQUIRES SCIENTIFIC AND ENGINEERING EFFORTS FOCUSED ON SPECIFIC GOALS. SOMEONE WITH AUTHORITY -- REALLY THE PRESIDENT AND CONGRESS -- HAS TO SET GOALS AND FUND PROGRAMS TO REACH THOSE GOALS. TO SOME EXTENT, DEFENSE REQUIREMENTS KEEP TECHNOLOGY MOVING AHEAD.

BUT WE NEED TO GET AWAY FROM WAR AND THE THREAT OF WAR AS THE SOURCE OF TECHNOLOGICAL AND INDUSTRIAL PROGRESS IF WE CAN. AND NASA IS THE ANSWER -- AT LEAST THE ONLY GOOD ANSWER I KNOW OF.

IF WE DID NOT HAVE THE NASA SPACE AND AERONAUTICS PROGRAMS, WHERE ELSE except the military COULD OUR SOCIETY TURN TODAY FOR THE GOALS AND THE FUNDS TO GENERATE NEW AEROSPACE TECHNOLOGY FOR THE CIVILIAN ECONOMY? I HAVE HAD A GOOD VANTAGE POINT IN THE PAST SEVEN YEARS TO SIT BACK AND CONSIDER THE ANSWER TO THAT QUESTION. I CANNOT THINK OF A BETTER ENGINE FOR GENERATING TECHNOLOGICAL PROGRESS IN THE AEROSPACE FIELD -- OR IN ANY RELATED FIELD -- THAN WE ALREADY HAVE OPERATING IN NASA. I DO NOT SEE ANY END TO NASA'S POTENTIAL USEFULNESS AS THE CATALYST FOR AMERICA'S ECONOMIC FUTURE.

WHEN I HEAR OR READ OF [redacted] MISGUIDED EFFORTS TO CUT THE SPACE PROGRAM STILL FURTHER THAN IT HAS ALREADY BEEN CUT, I AM CONTINUALLY AMAZED: EVERY COUNTRY IN THE WORLD SEEMS TO RECOGNIZE THE VALUE OF NEW TECHNOLOGY BUT THE UNITED STATES. THIS IS PERHAPS AN EXAGGERATION, BUT AT THE PRESENT TIME THERE IS MORE THAN A GRAIN OF TRUTH IN IT.

MANY OF OUR UNIVERSITY STUDENTS, AND THEIR ELDERS AS WELL, ARE PRIMARILY CONCERNED THESE DAYS WITH THE GREAT SOCIAL PROBLEMS THAT ARE STILL UNSOLVED -- OR BETTER, NOT COMPLETELY SOLVED -- IN THIS RICH POWERFUL COUNTRY OF OURS. I THINK THESE CRITICS REGARD SPACE AS QUOTE IRRELEVANT UNQUOTE. WELL, THEY ARE WRONG. FOR THE SOLUTIONS THEY SEEK, AND MANY OF THEM ARE TRULY AND COMMENDABLY IDEALISTIC, DEPEND REALLY ON A STRONG ECONOMY WITH RISING PRODUCTIVITY, AND IN MY NEW WORK AT NASA I SINCERELY BELIEVE I CAN DO AS MUCH TO INCREASE PRODUCTIVITY AND THEREBY HELP SOLVE SOCIAL PROBLEMS AS I COULD IN ANY OTHER JOB, OR ON ANY SOAPBOX, IN THE COUNTRY.

CALL IT INTUITION, OR WHAT YOU WILL, BUT I BELIEVE THAT SPACE IS RELEVANT IN TODAY'S TROUBLED WORLD. IF WE CAN MOVE AHEAD WITH THE PLANS WE HAVE AT NASA, WE CAN HELP MAKE THIS A BETTER COUNTRY IN A BETTER WORLD BEFORE THIS DECADE IS OUT. I THANK YOU.

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